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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/229,849	01/13/1999	MARTIN SERRANO	07470/30001	5312

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EXAMINER
FLEURANTIN, JEAN B

ART UNIT	PAPER NUMBER
2172	

DATE MAILED: 01/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/229,849	SERRANO, MARTIN	
	Examiner	Art Unit	
	Jean B Fleurantin	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,8-12,17-21 and 26-27* is/are rejected.

7)☒ Claim(s) *4-7,13-16 and 22-25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Claims 1-27 are remained pending for examination.

2. Applicant's arguments filed on 10/23/2002 with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 8-12, 17-21 and 26-27 are rejected under 35 U.S. C. 103 (a) as being unpatentable over Iwasawa et al. (US Pat. No. 5,151,991) ("Iwasawa").

As per claims 1-2, 10-11 and 19-20, Iwasawa teaches a method for producing a parallel computation specification based on such analysis (thus, detect the possibility of parallel execution of each statement inside a loop; which is readable as producing a parallel computation) (see col. 2, lines 4-5). But, Iwasawa does not explicitly indicate steps application program based on a script of a script-driven software tool, comprising automatically analyzing the script, and where such parallel computation specification provides functional equivalence to the script when executed by a parallel runtime system; and plus a fragment set based on such analysis, where such parallel computation specification and script fragment set. However, Iwasawa implicitly

indicates steps of a compiler for generating an object code consisting of instruction columns for executing in parallel from a source program on a multi-processor consisting of processors that operates in parallel with one another; which is readable as application program based on a script of a script-driven software tool, comprising automatically analyzing the script, and where such parallel computation specification provides functional equivalence to the script when executed by a parallel runtime system; and a fragment set based on such analysis, where such parallel computation specification and script fragment set, (see col. 1, lines 59-62). Further, in column 5, lines 60 through 67, Iwassawa teaches receiving this intermediate language 6 as the input middle process 14 makes optimization and parallelization to modify the intermediate language 6, code generation 15 generates an object code 12 to be executed in parallel from the intermediate language 6 modified by the middle process. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the teachings of Iwasawa with steps of the script when executed by a parallel runtime system; and a fragment set based on such analysis, where such parallel computation specification and script fragment set. This modification would allow the teachings of Iwasawa to improve the accuracy and the reliability of the parallelization applications of script-driven tools, and provide a parallelization compile method and system which can generate efficient object codes without taking fine characteristics of hardwares into specific consideration even when coding is made afresh (see col. 1, lines 55-58).

As per claims 3, 12 and 21, in addition to the discussion in claims 1 and 2, Iwasawa teaches constructing a serial dataflow graph from the parsed statements (thus, flow dependence exists from A(I+1, J) on the left side of 19 to A(I, J) on the right side of 20 since dependence relating to C among them is loop independent, flow dependence on A is detected by the processing 70 in figure 7 the processing 71 calculates from these loop carried dependence iterated twice that multiplicity is 1 and this value is stored in the field 24 of the loop table of figure 5, the multiplicity "1" means that execution is equivalent to the serial execution; which readable as serial dataflow graph from the parsed statements) (see col. 6, lines 40-49);

c) constructing a parallel dataflow graph from the serial dataflow graph (thus, the processing 72 in figure 7 estimates the dynamic number of executed instruction of DO 10I loop per each iteration, the statement 17 becomes 1 the statement 19 is 100 by multiplying the textural number of instruction 1 by the loop length 100 and the statement 20 is 100 by multiplying 1 by the loop length 100, the sum of them 201 is stored in the fields 25 and 26 and the product of this value 201 by the loop length 10 of the outer loop 10 is stored in the field 23, since synchronization is necessary whenever I is incremented by 1 from the data dependence relation the processing 74 stores the dynamic number of executed instructions per each iteration of the loop I in the field 27; which is readable as constructing a parallel dataflow graph from the serial dataflow graph) (see col. 6, lines 40-62).

As per claims 8, 17 and 26, the limitations of claims 8, 17 and 26 are rejected in the analysis of claim 1, and these claims are rejected on that basis.

As per claims 9, 18 and 27, Iwasawa teaches a method as claimed, where producing the parallel computation specification includes applying at least one pre-defined parallelization in rewrite algorithm selected from the group comprising simple partitioning (thus, since two statements exist inside the loop in this example the program is divided into two and the items that will affect the speed-up, that is the acceleration ratio, when they are executed in parallel by different processors are calculated and stored in the table for each loop; which is readable as where producing the parallel computation specification includes applying at least one pre-defined parallelization in rewrite algorithm selected from the group comprising simple partitioning)(see col. 3, lines 26-35), key-based partitioning, local-global division, external parallelism algorithm, and statement decomposition (thus, the proportion "ration" of the number of instruction necessary for executing in parallel for each iteration of loop to the total number of instructions is calculated, the possibility of parallel execution for each statement is detected the statement one and two are divided by the inner loop and the possibility of their parallel execution is detected; which is readable as local-global division, external parallelism algorithm, and statement decomposition)(see col. 3; lines 1-24).

Allowable Subject Matter

4. Claims 4-7, 13-16 and 22-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ihara et al. US Patent No. 5,088,034 relates to a parallel computer. Francois Bodin et al. A User Level Program Transformation Tool-1998 relates to parallelization.

Conclusion

6. Any inquiry concerning this communication from examiner should be directed to Jean Bolte Fleurantin at (703) 308-6718. The examiner can normally be reached on Monday through Friday from 7:30 A.M. to 6:00 P.M.

If any attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Mrs. KIM VU can be reached at **(703) 305-8449.** The FAX phone numbers for the Group 2100 Customer Service Center are: ***After Final* (703) 746-7238**, ***Official* (703) 746-7239**, and ***Non-Official (703) 746-7240***. NOTE: Documents transmitted by facsimile will be entered as official documents on the file wrapper unless clearly marked "***DRAFT***".

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2100 Customer Service Center receptionist whose telephone numbers are **(703) 306-5631, (703) 306-5632, (703) 306-5633**.

Jean Bolte Fleurantin

December 26, 2002

JBF/

JEANM. CORRIELUS
PRIMARY EXAMINER